

Practitioner's Docket No. 1001-132

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Czaplicki et al.

Application No.: 10/712,069

Group No.: 3726

Filed: 11/13/2003

Examiner: Sarang Afzali

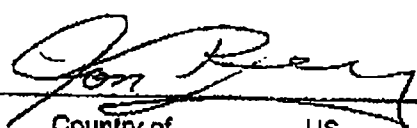
For: BAFFLING, SEALING OR REINFORCEMENT MEMBER WITH THERMOSET
CARRIER MEMBER AND METHOD OF FORMING THE SAMECommissioner for Patents
Washington, D.C. 20231Declaration Under C.F.R. section 1.131

1. This declaration is to establish conception of the technology disclosed and claimed in this application, in the United States, on a date prior to November 5, 2002, and due diligence from prior to November 5, 2002 to the filing of the above application.
2. I am named as an inventor of the above application, and I was or am employed by L&L Products, Inc. (hereinafter referred to as L&L), the assignee of the above application.
3. Attached as Exhibit A are photocopies of documents showing the activities of L&L's pursuit to patent the above technology in the above application, which were created prior to November 5, 2002.
4. Prior to November 5, 2002, inventor Jon Riley placed a request to order, from Premix Incorporated, a prototype mold configured to form the carrier of the U222 Lower D-Pillar Reinforcement. That request is provided in Exhibit A. At the time of that request, it was understood that the prototype mold would mold the carrier from a thermosettable material.
5. As proof of the carrier being formed of a thermosettable material, attached is a copy of a discussion document titled "Innovation Justification" in Exhibit A and that discussion document was created prior to the request that is also provided in exhibit A. The document outlines the basic project including benefits and costs of manufacturing the U222 Lower D-Pillar Reinforcement

using a molding compound and that molding compound is a thermosettable material.

6. As further evidence that the carrier for the above application was to be formed of a thermosettable material, we have attached, as Exhibit B, a printed screen of Premix's website that succinctly summarizes that Premix is one of the largest developers, formulators and manufacturers of thermoset compounds and parts.
7. The requested prototype mold was eventually ordered and received and used to form the U222 Lower D-Pillar Reinforcement carriers out of thermosettable material.
8. In addition to the above, activities toward preparing the provisional patent application, from which the present application claims benefit, were ongoing at times between November 5, 2002 and January 28, 2003 (i.e., the filing date of the provisional application).
9. The carrier of the U222 Lower D-Pillar Reinforcement can be substantially seen in Figures 1A and 1B of the provisional application (attached as Exhibit C).
10. The above referenced activities, occurring prior to November 5, 2002 and activities leading up to the filing of the above application all pertain to subject matter that corresponds with the text of the paragraphs in attached Exhibit D, that text being the current claims of the present application.
11. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Jon Riley

Inventor's signature 

Date _____

Country of _____

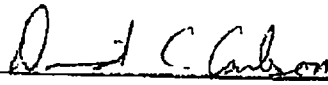
US

Citizenship: _____

Residence: Farmington, MI

Post Office 35433 Tall Pine Road
Address: Farmington, MI 48335

David Carlson

Inventor's signature 

Date _____

Country of _____

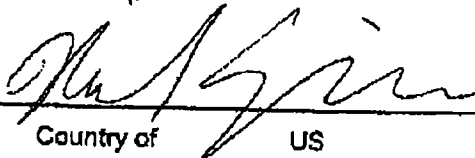
US

Citizenship: _____

Residence: Rochester Hills, MI

Post Office 287 Arlington Drive
Address: Rochester Hills, MI 48307

Michael J. Czaplicki

Inventor's signature 

Date _____

Country of _____

US

Citizenship: _____

Residence: Rochester, MI

Post Office 184 Whims Lane
Address: Rochester, MI 48306

Exhibit A

P.O. Box 308 - Romeo, MI 48065
(810) 336-1600

PreMix

440 224-222 045

2942-2766

1) Please enter our purchase order as shown below.

- 2) Complete the pricing and shipping information in the VENDOR ACKNOWLEDGMENT box.
- 3) Indicate your name and the date in the VENDOR ACKNOWLEDGMENT box.
- 4) Fax back to BUYER.

☐ NORTH PLANT:
74100 Van Dyke
Romeo, MI 48065
(810) 336-2000

☐ SOUTH PLANT:
160 McLean Drive
Romeo, MI 48065
(810) 336-1600

☒ **DEEP SOUTH:**
159 McLean Drive
Romeo, MI 48065
(810) 336-1600

PURCHASE ORDER / REQUEST FOR MATERIALS

VENDOR ACKNOWLEDGMENT

[illegible]



Premix Inc. Molding Compound Group Custom Molding Group International Group

P.O. Box 281, Rt. 20 & Harmon Road North Kingsville, OH 44068-0281 440.224-2181 Fax 440.224-2766

October 30, 2002

Ms. Terri Jozefiak *Fax No. 586.336.1728*

L&L Products
160 Mclean Drive
Romeo, MI 48065

**SUBJECT: Prototype Tooling
 U222 Lower D-Pillar Support
 Premix Cost Study #03004-FG**

Dear Terri:

We are pleased to provide our prototype mold estimate of \$40,500 for the U222 Lower D-Pillar Support. This mold is constructed of aluminum, un-chromed and un-textured and is designed to produce injection or compression molded parts.

Delivery of the mold to Premix is eight weeks. After delivery allow a maximum of two weeks for scheduling and sampling.

Terms: Tooling is 1/3 with your purchase order and final drawings, 1/3 upon tool delivery, and 1/3 upon receipt of first article samples not to exceed 30 days from shipment.

Thank you for the opportunity to review these components. If you have any questions feel free to contact Eric Fitzpatrick or me.

Sincerely,

PREMIX

Vince Profeta
Product Design Engineer

mjr

xc: Dave Carlson *Fax No. 586.336.3540*
 Chris Groesser *Fax No. 586.336.1699*
 Jon Riley *Fax No. 586.336.1699*
 L&L Products

Eric Fitzpatrick
Premix

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"Visit us at www.premix.com"

Innovation Justification: BMC/SMC/TMC Development Project

Overview

Sheet Molding Compound (SMC) / Bulk Molding Compound (BMC) was the structural material short-term game changer of choice at the offsite held earlier this year. Two other short-term game changers (blow molding and Mucell) have made significant developmental headway including designs, trials and quotes. This document outlines the basic project including benefits and initial costs.

The basic project is to investigate current manufacturing processes for these materials and develop a best practice utilizing these processes to reduce overall piece prices for our structural product line. This will require designs, tooling and plant trials both here at L&L and at a supplier (Premix, Inc) located just outside Cleveland, Ohio.

Benefits

SMC/BMC offer numerous benefits over many of the other investigated materials and processes. Both materials have a number of similarities with our existing product lines which introduce many manufacturing possibilities including processing both the SMC/BMC and our materials together.

Primary benefits include:

-
- ✓ Superior temperature and humidity resistance (as opposed to many thermoplastics, i.e. nylons)
 - ✓ Wide range of materials/properties
 - ✓ Multiple processes available (injection molding, compression molding)
 - ✓ Currently accepted in the automotive industry (SMC will be easier to "sell" than nylons)
 - ✓ Design flexibility (similar to other moldable materials)
 - ✓ Initial studies indicate lower pricing than traditional insert injection molding
 - ✓ Shorter lead times (Simpler tools & the elimination of overmolding)

Initial Required Resources

To initiate this project the following will be required.

- ✓ Tooling: \$40K* – Premix tool usable for both BMC & SMC materials and processes
- ✓ Staff support: 150 Hours
- ✓ Hourly support: 250-300 Hours

* - This tool will manufacture the U222 lower D-Plr reinforcement. If we are awarded this application, this tooling money can be rolled into tooling costs paid for by Ford.

Exhibit B

Search the site :

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Welcome to Premix

We are the **largest** North American developer, formulator and manufacturer of thermoset compounds and manufacturer of thermoset parts, sub-assemblies and assemblies serving the widest range of customers and applications with over **46 years** of experience in the industry.

We serve a broad range of industries including automotive, appliance, electrical, construction, industrial equipment, heavy truck, and aerospace/military. Customers served in these industries include Eaton, Dana, United Technologies, Cummins, Boeing, Harley Davidson, Trane, Caterpillar.

We have the widest range of commercial composite materials including SMC, BMC, TMC and ESC.

We operate internationally in Europe and Asia through a strong network of affiliates and partners which allows us to support our customers world wide.

Facilities

- Premix, North Kingsville, Ohio



*Corporate
Headquarters
Compound
Manufacturing
Compression and
Injection Molding
Research and
Development*



- Quantum
Composites, Bay
City, Michigan

***High Performance
Molding Compounds
Formulation
Compound
Manufacturing***

Premix Inc., P.O. Box 281, Rt.20 & Harmon Road, North Kingsville, OH 44068, USA
172504

Exhibit C

1/2

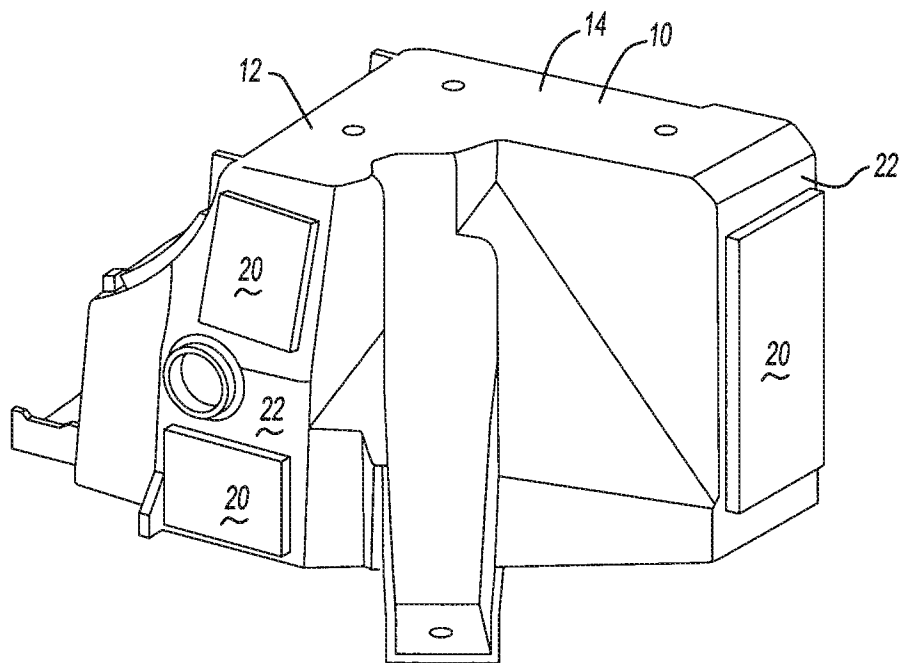
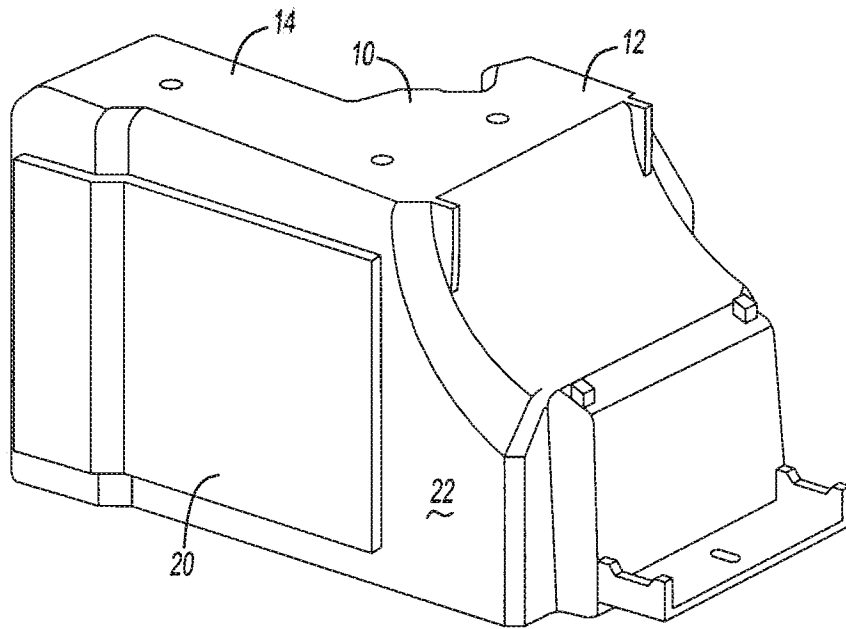


Exhibit D

Claim 1: A process of forming an assembly, the method comprising:

providing a thermosettable material, the material being selected from a sheet molding compound, a bulk molding compound, a phenolic resin or a combination thereof;

molding the thermosettable material to form a carrier member;

applying an activatable material to a surface of the carrier member for forming a reinforcement sealing or baffling member;

placing the reinforcement, sealing or baffling member within a cavity or adjacent to a surface of an article of manufacture, the cavity or surface being defined by one or more walls of a structure of the article of manufacture; and

activating the expandable material to form a foam that is adhered to the carrier member and the surface or walls of the structure of the article of manufacture.

Claim 2: A process as in claim 1 wherein the thermosettable material includes a thermosettable resin that is based upon at least one of a polyester, a vinyl ester, an epoxy or a combination thereof.

Claim 3: A process as in claim 2 wherein the thermosettable material is a molding compound and the thermosettable resin is between about 30% and about 60% by weight of the thermosettable material.

Claim 4: A process as in claim 2 wherein the thermosettable material includes a curing agent selected from a free radical initiator, an organometallic, an oxide catalyst, a peroxide catalyst, a polyhydric initiator or a combination thereof.

Claim 5: A process as in claim 2 wherein the thermosettable material includes a reinforcement material selected from fiber, particulate, fabric, mat, cordage or combinations thereof.

Claim 6: A process as in claim 2 wherein the thermosettable material includes a fibrous reinforcement material selected from polymeric fibers, metal fibers, carbon fibers, graphite fibers, polyester fibers, glass fibers, silicon carbide fibers, alumina fibers, titanium fibers, steel fibers or combinations thereof.

Claim 7: A process as in claim 6 wherein greater than about 50% of the fibers have a length greater than about 1.5 inches.

Claim 9: A process as in claim 1 wherein the step of molding the thermosettable material includes compressing the molding compound in a die.

Claim 10: A process as in claim 9 wherein the mold is heated to a temperature between about 200 °F and about 450 °F for molding the thermosettable material.

Claim 16: A process as in claim 1 wherein:

- i. the article of manufacture is an automotive vehicle and the structure is a pillar of the automotive vehicle;
- ii. the thermosettable material is based upon at least one of a polyester or a vinyl ester;
- iii. the step of molding the material is carried out at an elevated temperature in a heated mold;
- iv. the reinforcement, sealing or baffling member, upon activation and adhesion of the expandable material provides reinforcement to the structure of the automotive vehicle.

Claim 17: A process as in claim 16 wherein the step of applying the activatable material includes:

- i) contacting the activatable material with the surface of the carrier member as a temperature of the carrier member declines from the elevated temperature achieved during the molding step, such contacting thereby softening a portion of the activatable material

with the heat of the carrier member to wet the surface of the carrier member; and

- ii) allowing the softened portion of the activatable material to harden and adhere the activatable material to the carrier member.

Claim 18: A process as in claim 17 wherein the activatable material is applied to the carrier member as a plurality of shaped pieces.

Claim 19: A process as in claim 18 wherein the step of applying the activatable material to the carrier member further includes supporting the carrier member with a fixture.

Claim 20: A process as in claim 19 wherein the fixture includes a support member and a support surface, the support surface including a plurality of cavities and wherein the contacting of the activatable material with the surface of the carrier member includes placing the plurality of shaped pieces into the plurality of cavities and supporting the carrier member upon the support member such that the pieces contact the surface of the carrier member.

Claim 21: A process as in claim 20 wherein the fixture includes one or more actuating arms and wherein the step of contacting the activatable material with the surface of the carrier member include supporting the pieces of activatable material on the one or more arms and actuating the arms to contact the pieces with the surface of the carrier member.